What is claimed is:

1. A positive-acting photoimageable composition comprising a photoactive component and a polymer component,

the polymer component comprising a polymer that comprises Si atoms and silanol groups,

wherein the polymer has a ratio of silanol groups to Si atoms of about 0.01 to 1.5.

2. The photoimageable composition of claim 1 wherein the ratio of silanol groups to Si atoms is about 0.01 to 1.

3. The photoimageable composition of claim 1 wherein the ratio of silanol groups to Si atoms is about 0.01 to 1.

4. The photoimageable composition of claim 1 wherein the ratio of silanol groups to Si atoms is about 0.01 to 0.7.

5. The photoimageable composition of claim 1 wherein the ratio of silanol groups to Si atoms is about 0.01 to 0.4.

6. The photoimageable composition of claim 1 wherein the ratio of silanol groups to Si atoms is about 0.01 to 0.3.

7. The photoimageable composition of any one of claim 1 through 6 wherein the polymer comprises photoacid-labile groups.

8. The photoimageable composition of claim 7 wherein the photoacid-labile groups are ester groups or acetal groups.

9. The photoimageable composition of any one of claims 1 through 8 wherein the polymer comprises aqueous base-solubilizing groups.

10. The photoimageable composition of claim 9 wherein aqueous solubilizing are fluorinated alcohols, sulfonamide, carboxylic acid and/or thiols.

11. The photoimageable composition of claim 9 wherein the aqueous base-solubilizing groups comprise a hexafluoropropyl alcohol group.

12. The photoimageable composition of any one of claims 9 through 11 wherein the polymer contains at least about 20 mole percent of aqueous base-solubilizing groups based on total units of the polymer.

13. The photoimageable composition of any one of claims 9 through 11 wherein the polymer contains at least about 30 mole percent of aqueous base-solubilizing groups based on total units of the polymer.

14. The photoimageable composition of any one of claims 9 through 11 wherein the polymer contains at least about 40 mole percent of aqueous base-solubilizing groups based on total units of the polymer.

15. The photoimageable composition of any one of claims 9 through 11 wherein the polymer contains at least about 50 mole percent of aqueous base-solubilizing groups based on total units of the polymer.

16. The photoimageable composition of any one of claims 1 through 15 wherein the polymer comprises units that are free of photoacid-labile groups and aqueous base-solubilizing groups.

17. The photoimageable composition of any one of claims 1 through 16 wherein the polymer comprises at least two distinct repeat units.

18. The photoimageable composition of any one of claims 1 through 17 wherein the polymer comprises at least three distinct repeat units.

19. The photoimageable composition of any one of claims 1 through 17 wherein the polymer comprises at least four distinct repeat units.

20. The photoimageable composition of any one of claims 1 through 19 wherein the polymer comprises at least three distinct repeat units of: 1) units that contain photoacid-labile groups; 2) units that are free of photoacid-labile and aqueous base-solubilizing groups; and 3) units that comprise an aqueous base-solubilizing group.

21. The photoimageable composition of any one of claims 1 through 20 wherein the composition is a chemically-amplified positive acting photoresist.

22. The photoimageable composition of claim 1 wherein the composition is a negative-acting photoresist.

23. The photoimageable composition of claim 22 wherein the composition comprises a resin with primary or secondary alcohol moieties.

24. A positive-acting photoimageable composition comprising a photoactive component and a polymer component,

the polymer component comprising a polymer that comprises Si atoms, silanol groups, photoacid-labile groups, and aqueous base-solublzining groups;

wherein the polymer has a ratio of silanol groups to Si atoms of about 0.01 to 0.4, and the polymer contains at least about 50 mole percent of aqueous base-solublizing groups.

25. A photoimageable composition comprising a photoactive component and a polymer component,

the polymer component comprising a polymer that comprises Si atoms and a substituted sulfonamide moiety and/or a thiol moiety.

26. The photoimageable composition of claim 25 wherein the polymer comprises a substituted sulfonamide moiety.

27. The photoimageable composition of claim 25 or 26 wherein the polymer comprises a fluorinated sulfonamide moiety.

28. The photoimageable composition of any one of claims 25 through 27 wherein the polymer comprises a thiol group.

29. The photoimageable composition of any one of claims 25 through 27 wherein the polymer comprises an alkylsulfide moiety.

30. A coated substrate comprising:

a) a polymer composition coating layer applied over a substrate surface;

b) a coating layer of a photoimageable composition of any one of claims 1 through 29 disposed over the polymer composition coating layer.

31. A coated substrate of claim 30 wherein the polymer composition comprises a phenolic resin.

32. A coated substrate of claim 30 wherein the phenolic resin is a novolak resin or a poly(vinylphenol) resin.

33. A coating substrate of any one of claims 30 through 32 wherein the polymer composition comprises a component containing anthracene groups.

34. A coated substrate of any one of claims 30 through 33 wherein the polymer composition comprises a thermal acid generator compound or reaction product thereof.

35. A coated substrate of any one of claims 30 through 34 wherein the polymer composition comprises a crosslinker component.

36. A coated substrate of any one of claims 30 through 35 wherein the polymer composition is crosslinked.

37. A coated substrate of any one of claims 30 through 36 wherein the polymer composition does not contain a polymer with Si groups.

38. A coated substrate of any one of claims 30 through 37 wherein the polymer composition is not photoimageable.

39. A method for forming a electronic device, comprising:

(a) applying on a substrate a coating layer of a polymer composition;

(b) over the polymer composition coating layer, applying a photoimageable composition of any one of claims 1 through 29;

(c) exposing the photoimageable composition coating layer to activating radiation and developing the exposed photoimageable layer.

40. The method of claim 39 wherein a coating layer of the photoimageable composition coating layer is exposed with radiation having a wavelength of about 248 nm.

41. The method of claim 39 wherein a coating layer of the photoimageable composition coating layer is exposed with radiation having a wavelength of less than about 200 nm.

42. The method of claim 39 wherein a coating layer of the photoimageable composition coating layer is exposed with radiation having a wavelength of about 193 nm or 157 nm.

43. The method of any one of claims 39 through 42 wherein the polymer composition comprises a phenolic resin.

44. The method of claim 43 wherein the phenolic resin is a novolak resin or a poly(vinylphenol) resin.

45. The method of any one of claims 39 through 44 wherein the polymer composition comprises a thermal acid generator compound.

46. The method of any one of claims 39 through 45 wherein the polymer composition comprises a crosslinker component.

47. The method of any one of claims 39 through 46 wherein the polymer composition coating layer is crosslinked prior to applying the photoimageable composition thereover.

48. The method of any one of claims 39 through 47 wherein developing provides a positive tone image of the photoimageable composition.

49. The method of any one of claims 39 through 49 wherein substrate areas bared by development are etched or plated.

50. An article of manufacture comprising a substrate comprising a coating layer of a photoimageable composition of any one of claims 1 through 29.

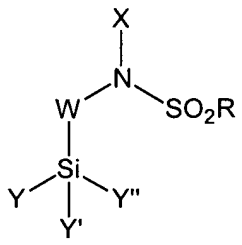
51. The article of claim 50 wherein a polymer composition coating layer is disposed under the photoimageable composition coating layer.

52. The article of claim 50 or 51 wherein the substrate is a microelectronic wafer substrate.

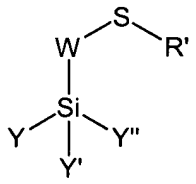
53. The article of claim 50 or 51 wherein the substrate is an optoelectronic device substrate.

54. The article of claim 50 or 51 wherein the substrate is a waveguide.

55. A polymer comprising groups of the following formula (I) and/or (II):



(I)



(II)

wherein in those formulae (I) and (II), Y, Y' and Y'' are each independently a chemical bond, hydrogen or a non-hydrogen substituent;

each W is a linker;

X is hydrogen or a non-hydrogen substituent; and

R is a non-hydrogen substituent; and

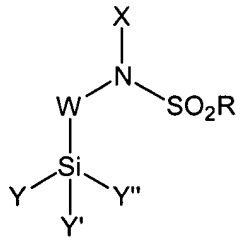
R^1 is hydrogen or a non-hydrogen substituent.

56. The polymer of claim 55 wherein the polymer comprises a group of formula (I).

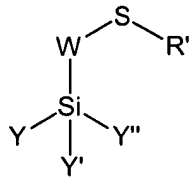
57. The polymer of claim 55 wherein the polymer comprises a group of formula (II).

58. A photoimageable composition comprising a photoactive component and a polymer of any one of claims 55 through 57.

59. A compounds that comprises a group of the following formula (I) and/or (II):



(I)



(II)

wherein in those formulae (I) and (II), Y, Y' and Y'' are each independently a chemical bond, hydrogen or a non-hydrogen substituent;

each W is a linker;

R is a non-hydrogen substituent; and

R^1 is hydrogen or a non-hydrogen substituent.